

Application No.: 10/521,089

Docket No.: CWEIN 3.3-001

IN THE DRAWINGS

Please replace FIG. 3 with the attached replacement  
Sheet (3 of 3).

REMARKS

The present amendment is responsive to the Office Action dated January 25, 2008. Claims 12-13 have been amended. Claims 23-26 have been added. No new matter has been introduced by the amendments or new claims. Claims 18-21 have been withdrawn. Claims 11, 14-17 and 22 have been cancelled. Claims 1-10 were previously cancelled. Thus, claims 12-13 and 23-26 are presented for consideration in view of the following remarks.

As an initial matter, the Abstract was objected to in view of the phrase "is disclosed." Correction was required pursuant to Manual of Patent Examining Procedure (M.P.E.P.) § 608.01(b). Applicant respectfully disagrees with the objection. Nonetheless, in order to expedite prosecution the Abstract has been replaced with a new Abstract in which the term "disclosed" has been removed. The new Abstract recites "A system is provided for powering a motor vehicle using a heat engine and an electric machine. The vehicle includes a supercapacitor which stores unused energy from the heat engine. When the vehicle speed stabilizes, energy is stored in the supercapacitor. The heat engine is shut down and the energy from the supercapacitor is then used to power the electric machine which supplies power to the wheels." In view of the above, applicant requests that the objection to the Abstract be withdrawn.

The drawings were objected to "because figure 3 appears to be in French." (Office Action, numbered section 4, p.2.) In reviewing the record, applicant notes that original FIG. 3 was in French. However, on April 7, 2005, a second submission was filed pursuant to 35 U.S.C. § 371. This included a substitute sheet (Rule 26) in which FIG. 3 was presented in English. To the extent that this sheet was not received or misplaced upon receipt, applicant submits herewith a new

replacement sheet for FIG. 3 in English. In view of this, applicant requests that the objection to the drawings be withdrawn.

Claim 17 was objected to due to an improper dependency. This claim has been cancelled, thereby mooting the objection.

Claims 15-17 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all limitations of the base claim and any intervening claims. The features of these claims have been incorporated into new claims 24-26. In view of this, applicants submit that claims 24-26 are in condition for allowance.

Claims 11 and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,823,281 ("*Yamaguchi*"). Applicant respectfully traverses the rejection.

Independent claim 22 has been cancelled, thereby mooting the rejection as to that claim. Independent claim 11 has been cancelled and rewritten as independent claim 23. This claim incorporates features of claim 14, which has also been cancelled. Claim 14 was rejected under 35 U.S.C. § 103(a) as being obvious over *Yamaguchi* in view of U.S. Patent No. 6,608,396 ("*Downer*"). Applicant traverses the rejections of both claims 11 and 14 and will address the deficiencies of both *Yamaguchi* and *Downer* below.

Claim 23 now recites that the motor vehicle comprises an electric machine connected to a static energy converter with terminals and at least one power semiconductor. The method of claim 23 includes controlling voltage at the terminal of the static energy converter in order to keep the voltage

substantially constant and near to a maximum value allowed by the power semiconductor of the static energy converter.

Applicant submits that it is clear that *Yamaguchi* does not disclose a method for transmitting power to wheels of a motor vehicle, including a step of controlling the voltage at terminals of a static energy converter to keep the voltage substantially constant and near to a maximum value allowed by a power semiconductor of the static energy converter.

Therefore, for at least this reason, claim 23 is not anticipated by *Yamaguchi*, as admitted by the examiner in section 11 of the Office Action, since claim 23 is a combination of claims 11 and 14.

As noted above, claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamaguchi* and further in view of *Downer*. As explained above, *Yamaguchi* does not disclose controlling a voltage at the terminals of a static energy converter connected to an electric machine in order to keep the voltage substantially constant and near to a maximum value allowed by at least one power semiconductor of the static energy converter.

As indicated in the description of the present application the:

presence of the DC-DC converter 9 make it possible to implement the alternative method according to the invention, wherein the voltage at the terminals of the static energy converter 6 is controlled in order to keep it substantially constant and close to the maximum value allowed by the semiconductors of the converter 6.

(Specification Paragraph [0070]).

Furthermore, paragraph [0086] of the description of the present application indicates that by keeping the voltage U

at a relatively high value at the terminals of the static energy converter 6, the current passing through both the electric machine and the static energy converter can be reduced by means of a suitable design of the electric machine. And as indicated in the following paragraph [0087], since the current in the power semiconductor is relatively low, the capacity of the semiconductors can be consequently reduced, and the cost of these semiconductors is thus dramatically reduced.

Turning to *Downer*, this reference discloses a power control system for an electric traction motor in a vehicle. This system includes a plurality of power stages 12 wired in parallel to produce a high output voltage  $V_+$ , motor inverters 14 to which is supplied the voltage  $V_+$ , and motor generators 18 (see column 3, lines 1-5). The motor generators 18 are dynamically coupled to an internal combustion engine 22 through a coupling 24 and function as either a motor to propel the vehicle 10 or a generator to charge battery modules 26 within the power stages 12, depending on the operating state of the vehicle 10. (See column 3, lines 12-18.)

Bidirectional boost/buck converters 13 provide a controllable interface between the low voltage battery modules 26 and a high voltage DC bus 48. (See column 3, lines 19-21.) The power stages 12 and motor inverters 14 are controlled by a hybrid system controller 28. (See column 3, lines 29 and 30). And as indicated at column 3, lines 44-56 of *Downer*, the controller 28 and inverter modules 14 determine the direction of power of current flow for the motor generators 18, according to the vehicle operating state. The boost/buck converters 13 act to regulate the high voltage DC bus 48 to the voltage  $V_+$ .

In a regeneration state or charging condition, power flows from the motor generators 18, via the inverter modules 14,

to charge the battery 26 in the power stage 12. In a state where the motor generators 18 are needed to provide propulsion, power flows from the power stages 12 through the inverter modules 14, to the motor generator 18. Therefore, the boost/buck converters 13 are intended to maintain the output voltage  $V+$  and balance the charge on the batteries 26, as it also results from column 5, lines 19-22 of *Downer*.

Applicant submits that in no case does *Downer* disclose a step of controlling voltage at terminals of the boost/buck DC-DC converters 13 to keep the voltage substantially constant and near to a maximum value allowed by the power semiconductors of the converters 13 in order to reduce the current passing through the power semiconductor and therefore the capacity of these semiconductors, as well as the cost of the semiconductors.

Rather, in *Downer*, the purpose is to provide a method and apparatus which can produce not only the usual high output voltage  $V+$  supplied to the motor generators 18 through the motor inverters 14, but also which can balance the charge on the battery modules 26 to prevent accelerated aging of the cells of each battery module. Since *Downer* does not disclose a method for transmitting power to wheels of a motor vehicle including a step of controlling voltage at terminals of a static energy converter to keep the voltage substantially constant and near to a maximum value allowed by the power semiconductors of the static converter, applicant submits that *Downer* does not rectify the admitted deficiencies of *Yamaguchi* and such a combination would not provide a method having all the steps as recited in claim 23 of the present application. Consequently, applicant submits that claim 23 is patentable over *Yamaguchi* in view of *Downer*.

Claims 12 and 13 were rejected under 35 U.S.C. § 103(a) as being obvious over *Yamaguchi*. Applicant respectfully traverses the rejection. These claims have been amended to depend from independent claim 23 and contain all the limitations thereof. For at least this reason, applicant submits that these subject dependent claims are likewise patentable.


As noted above, independent claims 24, 25 and 26 incorporate the limitations of claims 15, 16 and 17, respectively, as well as any base and intervening claims. As claims 15-17 were indicated to be allowable, applicant submits that new claims 24-26 are in condition for allowance.

As it is believed that all of the rejections set forth in the Office Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have. If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: June 23, 2008

Respectfully submitted,

By   
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